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# NATURAL GAS VEHICLE PROGRAM

**Program Introduction**

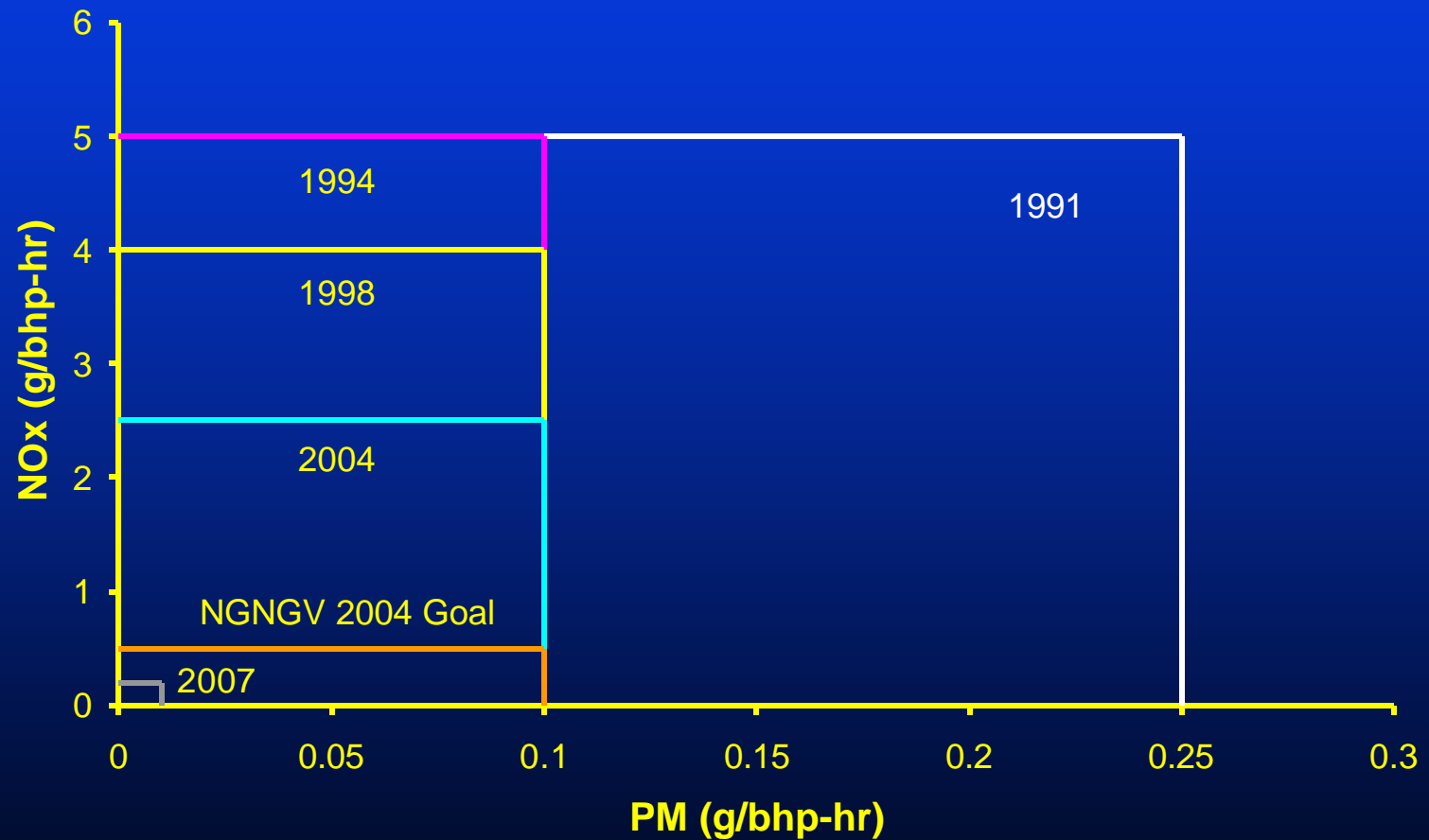
**May 2002**

**Denny Stephens, Battelle**  
**Deputy Program Manager**



# Our Challenge of Reducing Emissions

## EPA Exhaust Emission Standards for Heavy Duty Engines



# NGNGV Program Goals

- Develop and deploy by 2004
  - a heavy-duty 0.5 g/bhp-hr NO<sub>x</sub> LNG vehicle
  - a medium-duty 0.5 g/bhp-hr NO<sub>x</sub> CNG vehicle
- Develop and deploy by 2007
  - 0.2 g/bhp-hr or lower NO<sub>x</sub> versions of these vehicles
- Vehicle customers and NGV stakeholders will participate in the process of engine and vehicle development and demonstration



# Sponsors and Leadership

- This program is managed by
  - The National Renewable Energy Laboratory
    - Kevin Walkowicz, Program Manager
  - with support from Battelle
    - Denny Stephens, Deputy Program Manager
- This program is sponsored by:
  - The U.S. Department of Energy, Office of Transportation Technologies, Office of Technology Utilization
  - Dennis Smith, Program Manager
- With co-funding and support from the
  - California South Coast AQMD
  - California Energy Commission
- And additional support and input from:
  - DOE OHVT, CARB, GTI, NGVC, PG&E, Socal
  - The NGNGV Working Group
  - Customers and OEMs
  - And many others



# NGNGV Development Roadmap



## Two Phases of Research



Phase 1  
FY2001  
Emission Technology  
Conceptual Design



Phase 2  
FY2002  
Vehicle Integration  
0.2 g R&D

# NGNGV Phase 2 Targets

- **0.2 g/bhp-hr Engine and Aftertreatment Technology Development**
  - 2-year project on laboratory development of 0.2 g/bhp-hr NO<sub>x</sub>/0.01 g/bhp-hr PM technology for medium duty and heavy-duty natural gas engines for 2007
- **Chassis Development and Integration of 0.5 g/bhp-hr NO<sub>x</sub> Vehicles**
  - 2-year project to develop vehicles, integrate fuel system and 0.5 g/bhp-hr NO<sub>x</sub> engines into medium- and heavy-duty chassis, and demonstrate their functionality for 2004
- **On Road Prototype – Interim Technology Evaluation**
  - Interim demonstration and on-road development of evolving natural gas engine and vehicle technologies targeting 1.8 g/bhp-hr NO<sub>x</sub>

# Where can I get more information?

Phase 2 RFPs may be found at  
**[www.nrel.gov/contracts/rfps](http://www.nrel.gov/contracts/rfps)**

For more information,  
including adding your  
name to the mailing list for  
meeting notices, updates,  
and notifications, visit our  
website:

**[www.ctts.nrel.gov/ngngv](http://www.ctts.nrel.gov/ngngv)**

